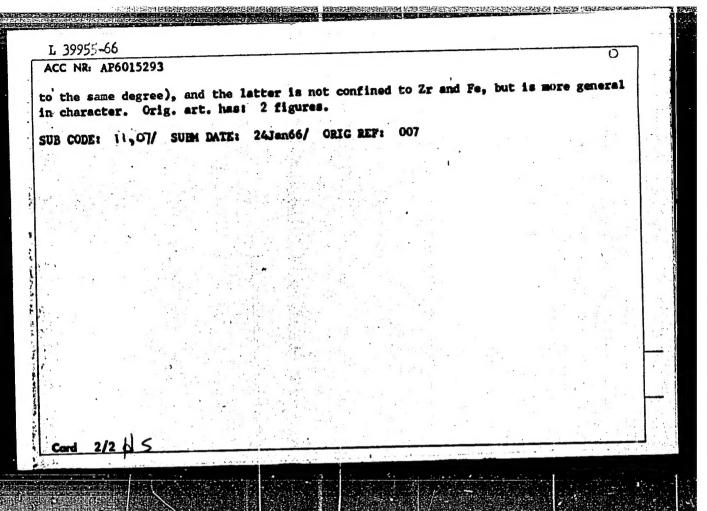
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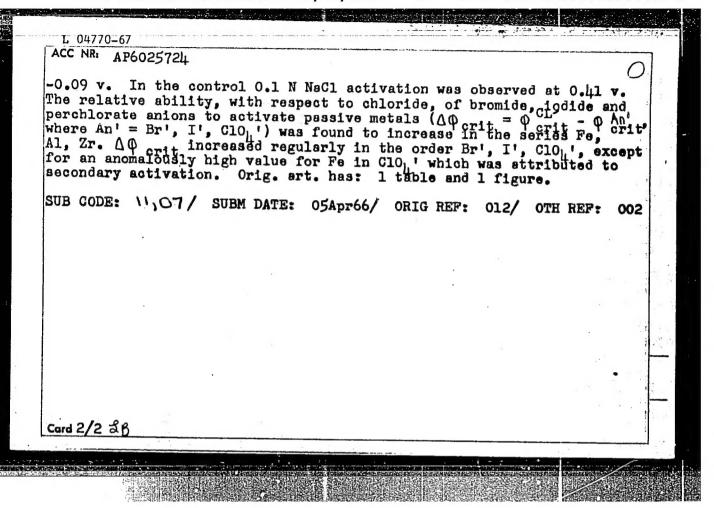
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ENT(m)/ENP(t)/HT WW/JD/JG/WB ACC NR: AP6015293 (N) SOURCE CODE: UR/0365/66/002/003/0360/0361 A THOR: Gil'man, V. A.; Kolotyrkin, Ya. M. CAG: Physicochemical Scientific Research Institute im. L. Ya. Karpov (Nauchnoissledovatel'skiy fiziko-khimicheskiy institut) TITLE: Pitting corrosion of zirconium in perchlorate solutions SOURCE: Zashchita metallov, v. 2, no. 3, 1966, 360-361 TOPIC TAGS: corrosion, zirconium, perchlorate, chloride ABSTRACT: A study of zirconium corrosion in 0.1 and 1.0 N NaClO4 and HClO4 and also 0.3 N LiClO4 showed that under spontaneous dissolution and anodic polarization conditions, zirconium is in a passive state until a certain critical potential or is reached, at which extensive pitting begins to take place. In this respect, the anodic behavior of Zr in perchlorate solutions is similar to that in chloride solutions, except for the fact that in the latter the critical pitting potential is more positive by almost one whole volt. The value of ϕ_{cr} in perchlorate solutions is determined by the ClO4" concentration, increasing by 100 mV for a tenfold decrease of the perchlorate concentration, and, as in the case of chlorides, is independent of the solution pH or the anodic current density. Thus, halide ions are not the only ones to cause the pitting corrosion of zirconium; C104" ions also have this capacity (although not Card 1/2 620.193.01



GE/0065/66/231/03-/0145/0150 SOURCE CODE: AUTHOR: Kolotyrkin, Ya. M. (Professor; Doctor); Florianovitch, G. M. ORG: L. Ya. Karpova Institute for Physical Chemistry, Moscow TIME: Temperature-dependence of the dissolution kinetics and of the passivation of retals and alloys. Part 2: Temperature-dependence of the dissolution mechanism SOURCE: Zeitschrift fur physikalische Chemie. v. 231, no. 3-4, 1966, 145-150 TOPIC TAGS: reaction mechanism, chemical kinetics, cathode polarization, iron, chromium, iron alloy, chromium alloy, sulfuric acid, temperature dependence, corresion ABSTRACT: Cathodic and anodic polarization curves were obtained for iron, chromium, and alloys of these in sulfuric acid at various temperatures, and the curves were compared with those corresponding to the relation between potential and dissolution rate, to elucidate the temperaturedependence of the dissolution kinetics. It was shown that both electrochemical and chemical processes are involved in the dissolution mechanism, and that the mechanism can be steered to favor either way by appropriate adjustment in the reaction parameters. The principal parameters involved are potential and temperature. The significance of the findings in correcton research was discussed. Orig. art. has: 5 figures. JPRS: 36,464 SUB CODE: 07, 20 SUBM DATE: 21Aug66 / ORIG REF: 003 20 /

JD/WB/JH IJP(c) EWT(m)/FWP(t)/FT: 1. 04770-67 UR/0365/66/002/004/0488/0490 SOURCE CODE: ACC NR: AP6025724 54 AUTHOR: Freyman, L. I.; Kolotyrkin, Ya. M. В ORG: Scientific Research Physicochemical Institute im. L. Ya. Karpov (Nauchno-issledovatel'skiy fiziko-khimicheskiy institut) TITLE: Pitting corrosion of sluminum in sodium perchlorate and hydrochloric acid solutions Zashchita metallov, v. 2, no. 4, 1966, 488-490 SOURCE: TOPIC TAGS: aluminum, corrosion, corrosion rate, perchlorate, chloride, solution kinetics, electrochemistry ABSTRACT: The behavior of aluminum in perchlorate- and chloridecontaining solutions was studied to obtain data to help explain the action between perchlorate ions and different metals. Polarization curves were obtained for the aluminum. The curves in pure borate buffer solution (pH 7.4) and in 0.1 N Na₂SO₁ coincided at potentials from -0.5 to +0.5 v, showing no activation. The behavior was similar in 0.1 N Na₂CO₁ up to about -0.05 v, but as potential increased to -0.03 v, the current rapidly increased. Electrode pitting and gas evolution were noted. Al was activated in 0.1 N HClO₁ at a lower critical potential of 620.193.01 UDC: Card 1/2



JD/WW/JG/WB EWT(m)/EWP(w)/EWP(t)/ETI/EWP(k) IJP(c) L 04777-67 SOURCE CODE: UR/0365/66/002/001/0490/0492 ACC NR: AP6025725 AUTHOR: Gil'man, V. A.; Kolotyrkin, Ya. M.; Malkina, R. I. ORG: Scientific Research Physicochemical Institute im. L. Ya., Karpov (Nauchno-issledovatel'skiy fiziko-khimicheskiy institut) Solution of zirconium in concentrated hydrochloric acid TITLE: SOURCE: Zashchita metallov, v. 2, no. 4, 1966, 490-492 TOPIC TAGS: zirconium, corrosion, corrosion rate, electrochemistry, solution kinetics, chloride, induction melting, metal melting ABSTRACT: Studies of the corrosion and electrochemical behavior of zirconium under anodic polarization conditions were continued using concentrated HCl, 11.5 N. In the passive region, at potentials more negative than +0.17 v, the rate of Zr solution to Zr 4 is independent of potential and amounts to 0.2-1.10-4 mp/cm . The rate of solution of Zr pre-etched in HF corresponds to the stationary anodic current density at the given potential. In the case of Zr with atmospheric oxide films, the initial average rate of solution is an order higher than the anodic current through the system, but becomes somewhat lower and almost constant with time. The proposed mechanism for the solution of passive UDC: 620.193.hl:669.296 Card 1/2

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UR/0317/66/000/003/0050/0055 SOURCE CODE: ACC NRI AP6030097

AUTHOR: Kolotyrkin, Ya. (Corresponding member AN SSSR; Director)

ORG: Physicochemical Institute im. L. Ya. Karpov, Academy of Sciences, SSSR (Fizikokhimichaskiy institut Akademii nauk SSSR)

TITLE: Weapons against corrosion

SOURCE: Tekhnika i vooruzheniye, no. 8, 1966, 50-55

TOPIC TAGS: corrosion, corrosion protection, corrosion resistance, corrosion CORROSION RESISTANT METAL, BLAST FURNACE

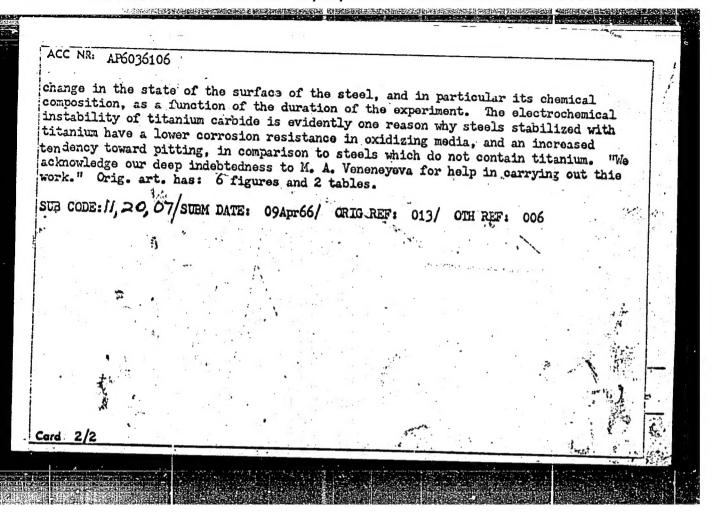
ABSTRACT: Corrosion damage to metals embracing nearly one eighth of the total production of blast and open-hearth furnaces, can be significantly reduced by inhibitor, applying effective modern means of providing protection against corrosion. Presented are methods for increasing the corrosion resistance of metals, including the processes of alloying, heat treatment, and the application of composite metals. Metal coatings, their application by electroplating, chemical, gas and plasma firing methods, and the use of lacquers, paints, and synthetics are discussed. The modern use of inhibitors for increasing the storability of metal products, cathodic protection, and a new electrochemical method of providing anodic protection, especially for appli ation to ferrous metals in a neutral medium, are outlined. Effecting a

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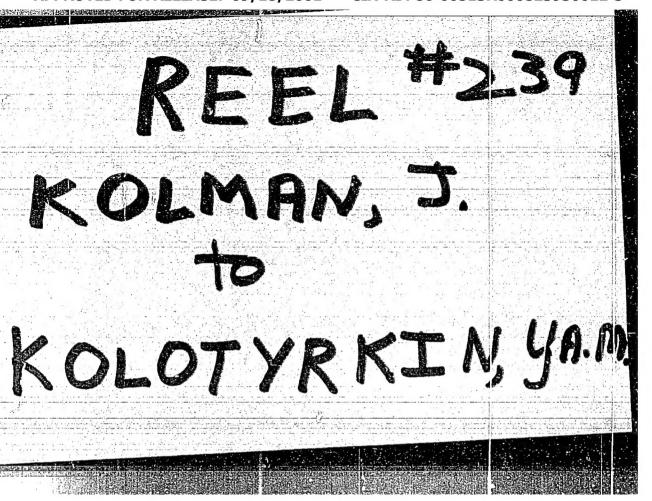
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UR/0365/66/002/006/0628/0635 (A, N) SOURCE CODE: AP6036106 Knyazhova, V. M.; Sumakova, I. S.; Kolotyrkin, Ya. M.; Kruzhkovskaya, A. A. ORG: Physicochomical Scientific Research Institute im. L. Ya. Karpov (Nauchnoissledovatel'skiy fiziko-khimicheskiy institut) TITIE: Anodic behavior of chrome-nickel steels stabilized with titanium SOURCE: Zashchita metallov, v. 2, no. 6, 1966, 628-635 TOPIC TAGS: chromium steel alloy, nickel containing alloy, titanium, electrochemistry ABSTRACT: The experiments were carried out on samples of Type Kh18N9T steel in a 1 N solution of sulfuric acid, at 70°, in an atmosphere of argon. In general, the polarization curves were taken for freshly purified samples which had not been subjected to previous cathode activation. In addition to the electrochemical measurements, the solutions were analyzed colorimetrically for Fe, Cr, and Ti, after the samples had been half it the given voltages. The sensitivity of the determinations was, respectively, 5×10^{-7} , 5×10^{-9} , and 2×10^{-7} grams/ml. It was concluded from the experimental data that titanium carbide, regardless of existing literature indications, cannot be recommended as an electrochemically stable anode. It follows also from the results of the present investigation that in the determination of the steady state anode potential curves, it is not necessary to take into account the UDC: 669.15-194:669.24127:541.1 Card 1/2



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